

Work Order ID 57683

April 13, 2010 12:50:49 PM



Page 1

Item ID:	D205-634-041	Accept		Setup	Start	
Revision ID:					Stop	
Item Name:	Replacement Skidtube					
Start Date:	13/04/2010	Start Qty:	1.00	Cust Item ID:		
Required Date:	30/04/2010	Req'd Qty:	1.00	Customer:		
Reference:						
Approvals:	Process Plan:	Date: 10-4-13	Tooling:		Date:	
	QC:	Date:	SPC (Y/N):		Date:	
				Run	Start	
					Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2580	Rev D								

100



DC

Document Control

DOCUMENT CONTROL

Memo

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

0.00

0.00

N/A

110



CNC Bend 1

CNC Delta 100 Bender

BENDING MACHINE - SKIDTUBES

Memo

1-Bend as per program D2580.C on CNC Bender and Folio FT009

2-Cut tubes as per Dwg. D2580

0.00

0.00

10-4-26

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

Work Order ID 57683

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Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 13/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 30/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Stop



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

4- Scribe batch number insied aft end of tube.

M10K1/28

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S10109/29

(X)

W/O:			WORK ORDER CHANGES					
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140

0.00


Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod *MIL3207*

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill
A/R□□□ Aluminum Rod *MIL3207*

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Debur

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580.
Debur holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

*BE 10/04/29**BE 10/04/29**BE 10/04/30*

W/O:			WORK ORDER CHANGES					
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Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

150

QC10- Inspect visual per QSI004- ground welds

0.00

8/10/04/30

QC

Memo

0.00

Quality Control

160

QC5- Inspect part completeness to step on W/O

0.00

8/10/04/30

QC

Memo

0.00

(X)

Quality Control

170

Pressure Wash per QSI005 4.3

0.00

HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

=> m-h 10/05/03

(H)

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum M114207	0.00							
Powdercoat	Memo	0.00							
Powder Coating	START TIME: 11:00 AM OVEN TEMPERATURE: 320°F FINISH TIME: 11:30 AM								
190 	QC3- Inspect Part Finish	0.00							
QC	Memo	0.00							
Quality Control									

7/4/10/05/03

7 m-h 10/05/04

(IX)

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Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200



HandFinish

Hand Finishing

Memo

0.00

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ ☐ ☐

Sikaflex expire date: 10/08

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ ☐ ☐

Sikaflex expire date: 10/08

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: M113545

M112429

m.k
10/05/05

W/O:			WORK ORDER CHANGES					
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Cust Item ID:

Required Date: 30/04/2010 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Subtotal

(u)

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220

Packaging

0.00



Packaging

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location:

PPP Rev:

PPR 57681

16/04/13

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/05/17

10-5-13

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Page 1

Work Order ID: 57683

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Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2580-1

Manufactured No

110

Each

5.0000

1.0000



205 Skidtube bent detail

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

56975

57028

57188

5

2

2

1

B57938

10-4-26

D2576-3

Manufactured No

140

Each

121.0000

1.0000



Step (maching detail)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

46661

52215

121

73

48

1 SE 10/04/29

D2579

Manufactured No

140

Each

113.0000

20.0000



Crossbolt Spacer

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

57052

113

113

B 57348

20

SE 10/04/29

W/O:			WORK ORDER CHANGES					
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 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2855 Manufactured No 200 Each 119.0000 1.0000



Cap

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
FP6	2	
56613	2	
Main Warehouse		
ST026	117	
50513	1	
50770	30	
51539	32	
53791	54	

AN3-5A Purchased No 200 Each 1,019.0000 2.0000



Bolt

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
ST350	1019	
105057	1019	

10/05/05

m-k

IX

IX

m-k

10/05/05

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 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

AN960JD10L Purchased No 200 Each 4,605.000 2.0000
 Washer ~~NA SH49603322~~ ~~NA 114347~~

2x m-l
 10/05/05

Warehouse Loc Qty Loc Code
Location
 Main Warehouse
 ST348 4605
 110985 4605

ALS7-1032-130 Purchased No 200 Each 409.0000 50.0000
 Insert

Warehouse Loc Qty Loc Code
Location
 Main Warehouse M 114407
 ST282 409
 113238 409

50x m-l
 10/05/04

AN3C4A Purchased No 200 Each 1,499.000 50.0000
 BOLT

Warehouse Loc Qty Loc Code
Location
 Main Warehouse M 114416
 ST350 1499
 113226 98
 114103 501
 114108 400
 114330 500

50x m-l
 10/05/05

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Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

AN960C10L Purchased No 200 Each 0.0000 50.0000
 washer
 D3566-13 Manufactured No 200 Each 53.0000 1.0000
 Gasket

NAS1149C0332R

M114341

50x m-l
 10/05/05

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP

53461

53

53

200

Each

11.0000

1.0000

1x m-l
 10/05/05

D3566-5

Manufactured No

Gasket

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP015

56829

11

11

200

Each

22.0000

2.0000

1x m-l
 10/05/05

D3566-1

Manufactured No

Gasket

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP015

57257

22

22

B 57715

2x m-l
 10/05/05

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Start Qty: 1.00

Required Qty: 1.00

D3564-11 Manufactured No 200 Each 15.0000 1.0000



Wearshoe

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP019

14

Main Warehouse

FP19

15

56834

1

57259

14

1X m.d
10/05/05

D3564-13 Manufactured No 200 Each 22.0000 1.0000



Wearshoe

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP

4

56285

4

Main Warehouse

FP17

18

56533 ✓

18

10/05/05
1X m.d

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Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-9 Manufactured No 200 Each 13.0000 1.0000



Wearshoe

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP

55334

Main Warehouse

FP019

57260

B57685

1x m-d
10/05/05

D3564-5 Manufactured No 200 Each 13.0000 1.0000



Wearshoe

Warehouse Loc Qty Loc Code

Location

OFFSHORE

FG

34806

Main Warehouse

FP

55024

55333

B57729

1x m-d
10/05/05

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Start Date: 13/04/2010

Required Date: 30/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2594-3 Manufactured No 200 Each 220.0000 16.0000



O-Ring, 205 Skidtube

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP

55546

B 58191

220

220

200

Each

427.0000

16.0000

16x m-1
w/05/04

D2594-1

Manufactured No



Plug, 205 Skidtube

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP

42807

55002

427

112

315

B 57826

16x m-1
w/05/04

April 13, 2010 12:50:53 PM

Shop Packet Print

Page 7

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:			WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART

DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY SCALE NTS	
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07-06-28 *[Signature]*

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. *57683*
B210-4-B

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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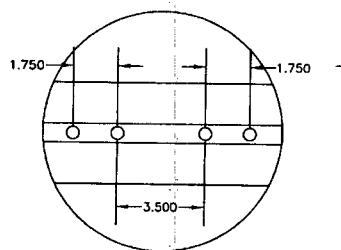
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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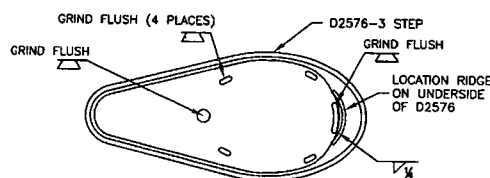
NOTE: Date & initial all entries

DETAIL A
SCALE 5:24

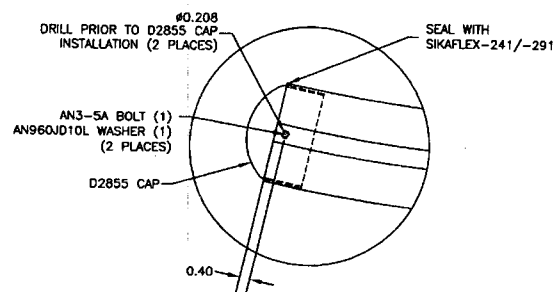


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07 Dec 84

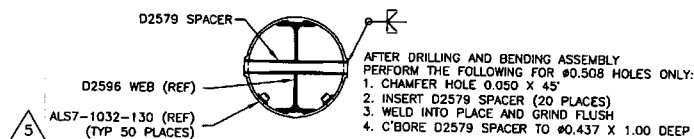
DETAIL B
SCALE 5:24



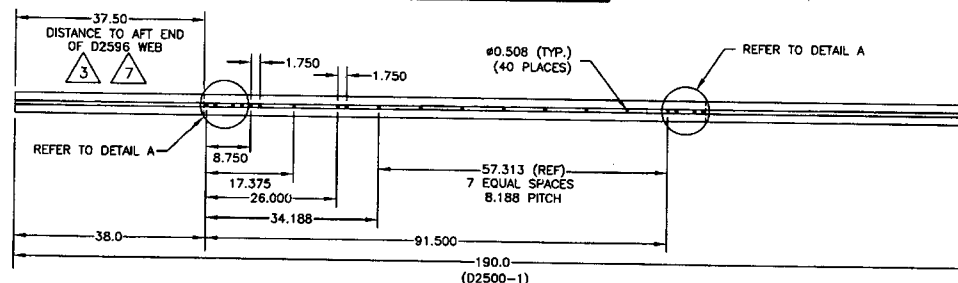
DETAIL C
SCALE 5:24



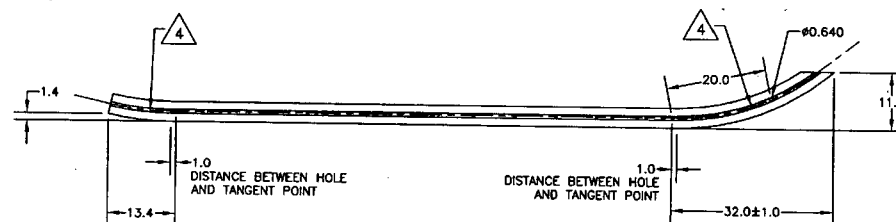
SECTION D-D
SCALE 5:24



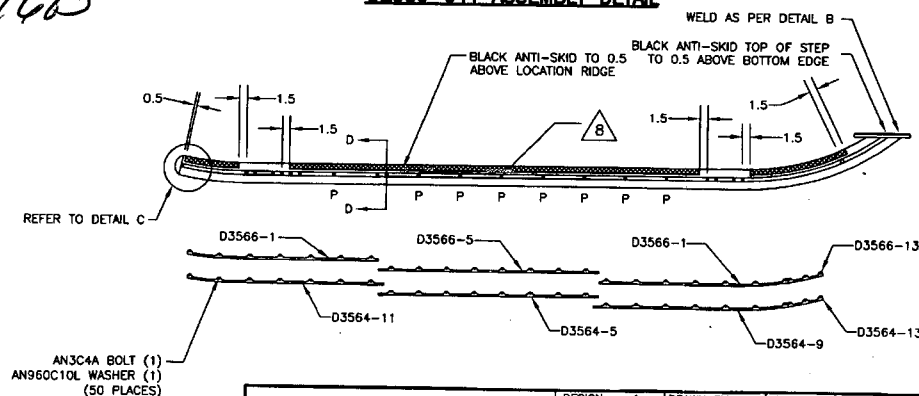
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



D2580-041 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

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DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HAMPSHIRE, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO.	REV. D
DATE	TITLE	D2580	SHEET 2 OF 3
07.02.27	205 SKIDTUBE ASSEMBLY	SCALE	1:24

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

DETAIL F
SCALE 5:24

GRIND FLUSH (4 PLACES)

GRIND FLUSH

D2576-3 STEP

LOCATION RIDGE ON UNDERSIDE OF D2576

X

Technical drawing of a circular component with the following annotations and dimensions:

- DRILL PRIOR TO D2855 CAP INSTALLATION (2 PLACES)**: Points to two small circles on the left side of the component.
- #0.208**: Dimension for the diameter of the two small circles.
- AN3-SA BOLT (1)**: Points to a bolt on the right side of the component.
- AN960JD10L WASHER (1)**: Points to a washer on the right side of the component.
- (2 PLACES)**: Points to two small circles on the right side of the component.
- D2855 CAP**: Points to a cap on the right side of the component.
- SEAL WITH SIKAFLEX-241/-291**: Points to a seal on the right side of the component.
- SEE NOTE ii)**: Points to a note on the right side of the component.
- 0.40**: Dimension for the distance between the two small circles on the left side.

Diagram showing a circular assembly with labels:

- D2579 SPACER
- D2596 WEB (REF)
- AL57-1032-130 (REF)
(TYP 50 PLACES)

Instructions:

AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X .45
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO #0.437 X 1.00 DEEP

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE
WITH THE SPACER AT THIS LOCATION

ELEVATION DETAIL

37.50
DISTANCE TO AFT END
OF D2596 WEB

3
7

1.750 1.750

0.508 (TYP.)
(40 PLACES)

REFER TO DETAIL E

REFER TO DETAIL A

8.750
17.375
26.000
34.188

57.313 (REF)
7 EQUAL SPACES
8.188 PITCH

38.0 91.500

190.0
(D2500-1)

WELD AS PER DETAIL F

BLACK ANTI-SKID TO 0.5 ABOVE LOCATION RIDGE

BLACK ANTI-SKID TOP OF STEP TO 0.5 ABOVE BOTTOM EDGE

NO C'BORE NO PLUG

REFER TO DETAIL G

0.5

1.5

H

P

B

1.5

1.5

1.5

D3566-1

D3566-5

D3566-1

D3566-13

D3564-11

D3564-5

D3564-9

D3564-13

AN3C4A BOLT (1)

AN960C10L WASHER (1)

(50 PLACES)

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HAWKESTERY, ONTARIO, CANADA

REV. 0

SHEET 3 OF 3

TITLE	205 SKIDTUBE ASSEMBLY
-------	-----------------------

SCALE

JUNE

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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NOTE: Date & initial all entries

NO. 20

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barday Elliott
Job number: 576830
Part number: D205-634.041
Description: 205 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminium
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Pat Pat Date of Test Coupon 10.04.27

Welder Barday Elliott Date of Test Coupon 10.04.27

The above named individual is qualified in accordance with AWS D17.1.2001 to weld